



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,293	05/23/2006	Amir Parham	14113-00011-US	4042
23416 7590 01/10/2008 CONNOLLY BOVE LODGE & HUTZ, LLP P O BOX 2207 WILMINGTON, DE 19899			EXAMINER LISTVOYB, GREGORY	
			ART UNIT 1796	PAPER NUMBER
			MAIL DATE 01/10/2008	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/580,293

Applicant(s)

PARHAM ET AL.

Examiner

Gregory Listvoyb

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 May 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 17-23 and 25-28 is/are pending in the application.
- 4a) Of the above claim(s) 20-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-15, 17-19, 23 and 25-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 5/23/2006 and 7/03/2006.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Restriction to one of the following inventions is required under 35 U.S.C. 121:

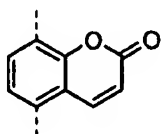
- I. Claims 1-15, 17-19, 23, 25-28, drawn to conjugated polymer, classified in class 528, subclass 373.
- II. Claims 20-22, drawn to monomer, classified in class 257, subclass 59.

The inventions are distinct, each from the other because of the following reasons:

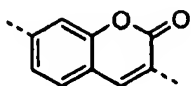
Inventions I and II are related as mutually exclusive species in an intermediate-final product relationship. Distinctness is proven for claims in this relationship if the intermediate product is useful to make other than the final product, and the species are patentably distinct (MPEP § 806.05(j)). In the instant case, the intermediate product is deemed to be useful as individual fluorescent compounds and the inventions are deemed patentably distinct because there is nothing on this record to show them to be obvious variants. As shown by Chen et al (UD 2003/0164499) herein Chen, Arylamino coumarine monomers can be used in light-emitting devices (see Abstract).

Because these inventions are independent or distinct for the reasons given above and there would be a serious burden on the examiner if restriction is not required because the inventions have acquired a separate status in the art in view of their different classification, restriction for examination purposes as indicated is proper.

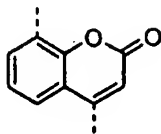
This application contains claims directed to the following patentably distinct
species:



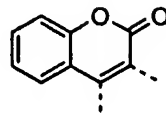
Formula (2)



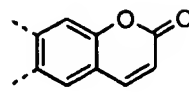
Formula (3)



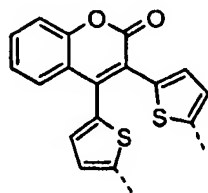
Formula (4)



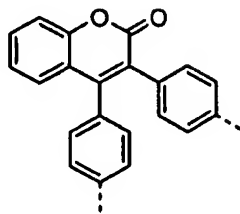
Formula (5)



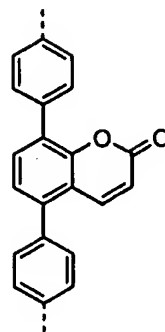
Formula (6)



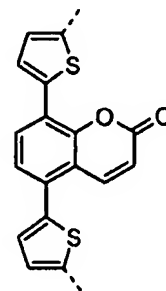
Formula (7)



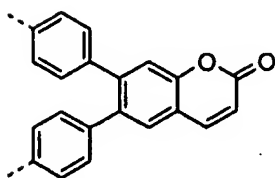
Formula (8)



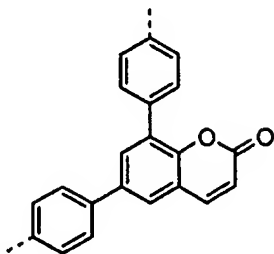
Formula (9)



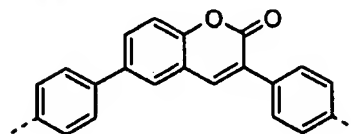
Formula (10)



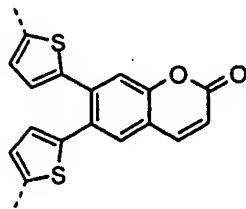
Formula (11)



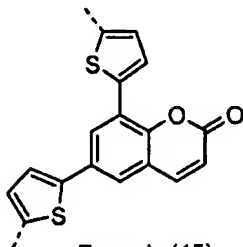
Formula (12)



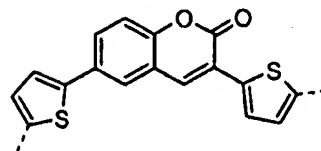
Formula (13)



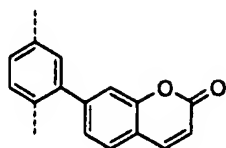
Formula (14)



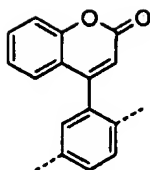
Formula (15)



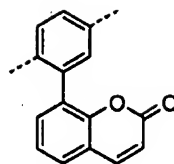
Formula (16)



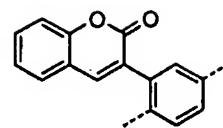
Formula (17)



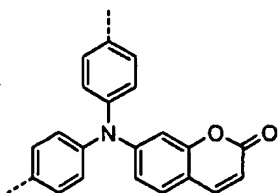
Formula (18)



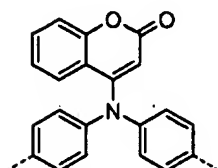
Formula (19)



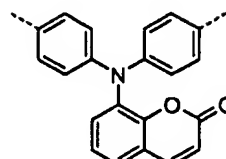
Formula (20)



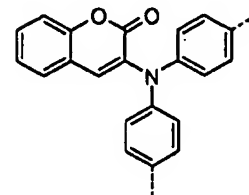
Formula (21)



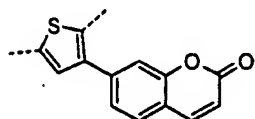
Formula (22)



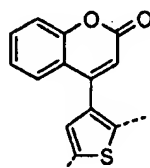
Formula (23)



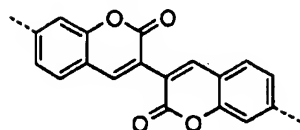
Formula (24)



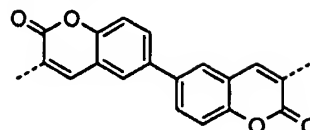
Formula (25)



Formula (26)



Formula (27)



Formula (28)

The species of Formulas 2- 6 are independent or distinct because they have a coumarin group with different linking positions to a polymer chain.

Among the above species Structures 2 and 6 attach to a polymer through phenyl fragment with ortho- (Formula (2)) and metha (Formula (6)) positions. Structures 3 and 4

link to a polymer with phenyl and heterocyclic rings in two different positions. Structure 5 link to a polymer with heterocycle.

The species of Formulas 7, 10, 14- 16 are independent or distinct because they have two thiophene groups attached to a coumarin group in different positions and variable linking positions to a polymer chain. Among the above species in Structure 7 two thiophens attach to heterocycle, in Structures 10 and 14-15 thiophens attach to phenyl in ortho, para and metha positions, in Structure 16 thiophens link to phenyl and heterocycle.

The species of Formulas 25 and 26 are independent or distinct because they have one thiophene group attached to a coumarin group in different positions (i.e. attached to phenyl (25) and heterocycle (26)) and variable linking positions to a polymer chain.

The species of Formulas 8-9, 11-13 are independent or distinct because they have two phenyl groups attached to a coumarin group in different positions and variable linking positions to a polymer chain. Among the above species in Structure 8 two phenyls link to heterocycle, in structures 9, 11 and 12 phenyls link to coumarin's phenyl in ortho, para and metha positions, in structure 13 phenyls link to coumarine's phenyl and heterocycle.

The species of Formulas 17-20 are independent or distinct because they have one phenyl group attached to a coumarin group in different positions and variable linking positions to a polymer chain. Among the above species in Structures 17 and 19 phenyl links to coumarin's phenyl in ortho and meta positions, in Structures 18 and 20 phenyl links to coumarin's heterocycle in ortho and meta positions.

The species of Formulas 21-24 are independent or distinct because they have one aminodiphenyl group attached to a coumarin group in different positions and variable linking positions to a polymer chain. Among the above species in Structures 21 and 23 Nitrogen links to coumarin's phenyl in ortho and meta positions, in Structures 22 and 24 Nitrogen links to coumarin's heterocycle in ortho and meta positions.

The species of Formulas 27-28 are independent or distinct because they have two coumarin groups linked together with variable linking positions to a polymer chain, i.e. linked through coumarin's phenyl and heterocycle.

Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable.

Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which depend from or otherwise require all the limitations of an allowable generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

During a telephone conversation with Ashley Pezzner on 12/12/2007 a provisional election was made with traverse to prosecute the invention of Falcou et al, claims 1-19 and 23-28 and species of Formula (21) of Claim 28. Affirmation of this election must be made by applicant in replying to this Office action. Claims 20-22 withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

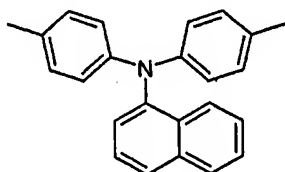
Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

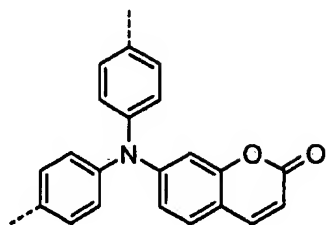
Claims 1-15, 17-19, 23, 25-28 rejected under 35 U.S.C. 103(a) as being unpatentable over Busing et al (WO 2004/037887, cited with equivalent US 2006058494) herein Busing in combination with Chen et al (US 20030164499) herein Chen as evidences by Yun et al (US 5650456) herein Yun

Busing discloses a polymer, comprising units with the following formula (see page 2):



(1)

which has the same arylamine fragment as a polymer of the Application examined (see Claim 28, Formula 21):



Formula (21)

.The difference between Structures (1) and (21) is that Busing's polymer has Biphenyl fragment instead of Coumarine one of the Application. Note that both polymers are parts of Light Emitting Diodes (LED) (see Spec and Busing, line 0001, meeting the limitations of Claim 23, 25-26).

Chen discloses fluorescent bis-coumarines with the above Formula (21) (see Abstract). Chen uses his compounds for LED.

Chen teaches that his compound combine well known photoluminescence properties of coumarine with good thermostability, provided with arylamine (see line 0004).

As evidences by Yun, electroluminescent polymers (see Column 7, line 65) having coumarine units (see Abstract) are known.

Regarding Claims 17-19, Chen teaches that coumarine-containing compound can be used in amount from 0.1 to 5 %wt based on the weight of the emissive layer, comprising one or more polymers (see Claim 9).

Therefore, it would have been obvious to a person of ordinary skills in the art to incorporate Chen's coumarine containing units into Busing's polymer in order to combine photoluminescence properties of coumarine with good thermostability, provided with arylamine.

Regarding Claim 2, 3 and 5, Busing does not specifically disclose a location of Structure 1 in the polymer chain. However, based on synthesis conditions (they are analogous in Busing and in the Application), the above structure can be incorporated both in main and side chain of the polymer.

In reference to Claim 4, 6, 7-8, 9-11, 13-14 Busing discloses a homo- and copolymers (having at least 10% mol of structure of Formula 1, see line 0045), further fragments with the following units: 1, 4 naphthalenes, triarylaminines, pyridines , etc (see line 0036 and Claim 3).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory Listvoyb whose telephone number is (571) 272-6105. The examiner can normally be reached on 10am-7pm.

Application/Control Number:
10/580,293
Art Unit: 1796

Page 11

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gregory Listvoyb
Examiner
Art Unit 1796

GL


RABON SERGENT
PRIMARY EXAMINER

Application/Control Number:
10/580,293
Art Unit: 1796

Page 12